Development of Band Reject Filter to Mitigate the effect of WLAN in UWB Receivers

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***Abstract*— This paper is about a dual band single notch filter to eliminate the effect of WLAN in UWB range. A novel square resonator with interdigital coupling at both sides plays a key role in this filter design. Design and EM Simulation of the dual band notch filter's characteristics are discussed in this paper. The proposed dual band notch filter produces excellent bandwidth from 2 GHz to 5 GHz and from 5.5 GHz to 8 GHz. The filter rejects the band of frequency from 5 GHz to 5.5 GHz which is very narrow band in which the filter eliminates the effect of WLAN (IEEE 802.11a). Also the out band performance of the proposed dual band filter meets the requirement of FCC's mask. The simulation analysis of the proposed filter is performed by electromagnetic solver. The return loss, insertion loss, group delay and phase of the filter are simulated and their performances are analyzed. The overall dimension of the filter is achieved to be 39mm×3.2mm×1.6mm on accounting the above features. The fractional bandwidth of the notch filter is calculated from the bandwidth and the center frequency and it is obtained about 115%. The S parameter results of the filter such as return loss (S_{11}) in stop band is about -24 dB and insertion loss (S_{21}) is about -28 dB is obtained.**

***Keywords*— Ultra wideband filter, square resonator, insertion loss, return loss, group delay analysis.**

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